ADEQ Arizona Department of Environmental Quality

DRAFT FACT SHEET

Aquifer Protection Permit 511633
Place ID 147653, LTF 61397
Gunnison Copper Project

The Arizona Department of Environmental Quality (ADEQ) proposes to issue an aquifer protection permit (APP) for the subject facility that covers the life of the facility, including operational, closure, and post -closure periods unless suspended or revoked pursuant to Arizona Administrative Code (A.A.C.) R18 -9-A213. This document gives pertinent information concerning the issuance of the permit. The requirements contained in this permit will allow the permittee to comply with the two key requiremen ts of the Aquifer Protection Program : 1) meet Aquifer Water Quality Standards at t he Point of Compliance; and 2) demonstrate Best Available Demonstrated Control Technology (BADCT). BADCT's purpose is to employ engineering controls, processes, operating methods or other alternatives, including site-specific characteristics (i.e., the local subsurface geology), to reduce discharge of pollutants to the greatest degree achievable before they reach the aquifer or to prevent pollutants from reaching the aquifer.

I. FACILITY INFORMATION

Name and Location

Permittee's Name:	Excelsior Mining Arizona, Inc.
Mailing Address:	2999 N. 44th St., Suite 300 Phoenix, Arizona 85018
Facility name and location:	Gunnison Copper Project 2600 North Johnson Road Dragoon, Arizona 85609

Regulatory Status

The APP does not authorize discharge of pollutants to any of the facilities covered under this permit until the permittee submits an amendment application as per Compliance Schedule Item in the permit in Section 3.0 to provide a financial assurance mechanism.

Facility Description

The proposed project consists of an in -situ copper mine located on approximately 700 acres of land in Cochise County. The project is an in -situ leaching and recovery operation (ISR) using wells to inje ct and recover mining solutions. This process involves injecting leach solutions (lixiviant) into the orebody using injection wells and extracting copper -bearing solutions (pregnant leach solutions or PLS) through surrounding recovery wells. The lixiviant will be injected into the oxide zone of the bedrock beneath the site for the purposes of dissolving copper minerals from the ore body. The estimated injection zone is between approximately 250 feet below ground surface (ft bgs) to 1,500 ft bgs. The res ulting copper-bearing solution will be pumped by recovery wells to the surface where copper will be removed from the solution in a solvent extraction electrowinning (SX/EW) plant. The barren solution from the SX/EW plant will be re-acidified and re-injected back into the oxide zone.

The project will be constructed and operated in three stages.

Stage 1 Mining
Stage 1 will be developed in the southern part of the wellfield on approximately 21 acres in Township 15S, Range 23E, Section 31. The duration of th is stage is 10 years and will generate approximately 25 million pounds of copper per year. During this stage, approximately 200 injection/recovery wells are planned to be installed and operated. Recovered solutions (PLS) will be conveyed between the Gunnis on wellfield and process solution ponds located at the Johnson Camp Mine (JCM) facility (permitted under the APP Permit No. P -100514) through several pipelines approximately 3 miles in length. Raffinate will be re -acidified at the JCM facility and pumped b ack as lixiviant to the project site. Pipeline Drain Pond and Evaporation Pond #1 will be constructed during this stage.

Stage 2 Mining
Stage 2 will be developed on approximately 42 acres in Township 15S, Range 23E, Section 31. The duration of this stage is 3 years and will generate approximately 75 million pounds of copper per year. During this stage, approximately 230 injection/recovery wells are planned to be installed and operated. Several ponds, including a PLS pond, Raffinate Pond, Recycled Water Pond, S olids Ponds 1 and 2, Plant Runoff Pond, and the SX/EW plant will be constructed at the project site during this stage.

Stage 3 Mining
Stage 3 will be developed on approximately 161 acres in Township 15S, Range 23E, Section 31 and Township 15S, Range 2 2E, Section 36. The duration of this stage is 7 years and will generate approximately 125 million pounds of copper per year. During this stage, approximately 1004 injection/recovery wells are planned to be installed and operated.

II. BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY (BADCT)

The Pipeline Drain Pond and the Plant Runoff Pond will be single -lined with a minimum 60-mil HDPE liner, the remaining ponds will be double -lined with a minimum 60 -mil HDPE liner separated by a minimum 200 mil geonet.

Injection and recovery rates from the wellfield are approximately equal with net extraction obtained from the surrounding hydraulic control wells. Details on the BADCT for the ponds, wellfield, and the hydraulic control wells are located in Sections 2.2.3, 2.2.4 , 2.3, 2.5 and Tables 4.1-2, 4.1-3 and 4.1-9.

III. COMPLIANCE WITH AQUIFER WATER QUALITY STANDARDS

Monitoring and Reporting Requirements
The Point of Compliance (POC) well locations are established by the following monitoring location(s):

Point(s) of Compliance Wells

POC ID	Latitude	Longitude	Purpose
Stage 1			
POC-1 (Wellfield)	32° 04' 46.4"	110° 02' 25.5"	South PMA boundary
POC-2 (Wellfield)	32° 04' 48.6"	110° 02' 03.5"	Southeast portion of the PMA, at the

POC ID	Latitude	Longitude	Purpose
			edge of the maximum capture zone at the end of mine life
POC-3 (Wellfield)	32° 05' 00.9"	110° 02' 05.4"	East portion of the PMA, at the edge of the maximum capture zone at the end of mine life
POC-6 (Conceptual)	32° 04' 56.2"	110° 02' 03.04"	East of Evaporation Pond #1
Stages 2 & 3			
POC-4 (Wellfield)	32° 05' 18.3"	110° 02' 19.9"	Northeast portion of the PMA, at the edge of the maximum capture zone at the end of mine life
POC-5 (Wellfield)	32° 05' 25.3"	110° 02' 38.9"	Northern portion of the PMA, at the edge of the maximum capture zone at the end of mine life
POC-7 (Conceptual)	32° 05' 02.3"	110° 02' 06.1"	East of Clean Water and Recycle Water Ponds
POC-8 (Conceptual)	32° 05' 10.1"	110° 01' 57.7"	East of Raffinate and Plant Runoff Ponds
POC-9 (Conceptual)	32° 05' 19.6"	110° 01' 56.3"	East of Solids Impoundment #1
POC-10 (Conceptual)	32° 05' 29.6"	110° 01' 51.5"	Northeast of Solids Impoundment #2

Groundwater monitoring is required for POC Wells POC-1 through POC-3 for Stage 1. Groundwater monitoring is required for POC Wells POC-1 through POC-5 for Stages 2 and 3 and Post-production Rinsing. Groundwater monitoring is not required for the Conceptual POC locations.

Hydrology

The local geology has the following site-specific characteristics:

- The alluvium above the ore body is primarily unsaturated or if the alluvium is saturated, it is limited in extent and thickness
- The fault network and bedding plane fractures result in hydraulic connections over long distances
- Natural groundwater gradients are steep on the west side of the wellfield and less steep across the wellfield with overall gradients from west to east
- Large attenuation capacity of limestone within and downgradient of the zone of injection.

The groundwater flow direction is to the east. The pollutant management area (PMA) encompasses Stages 1, 2, and 3 wellfield and all ponds. The discharge impact area (DIA) is the same as the PMA.

IV. STORMWATER and SURFACE WATER CONSIDERATIONS

The BADCT for the ponds located at the facility are designed for a 100 -year, 24-hour storm event including operational flows. Stormwater diversion features have been provided where necessary. Table 4.1 -9 of the permit provides additional details of stormwater diversion structures where provided.

V. COMPLIANCE SCHEDULE

The Compliance Schedule is provided in Section 3.0 of the permit.

VI. OTHER REQUIREMENTS FOR ISSUING THIS PERMIT

Technical Capability

The permittee has demonstrated the technical competence necessary to carry out the terms and conditions of the permit in accordance with A.R.S. § 49 -243(N) and A.A.C. R18-9-A202(B).

ADEQ requires that appropriate documents be sealed by an Arizona-registered Geologist or Professional Engineer. This requirement is a part of an ongoing demonstration of technical capability. The permittee is expected to maintain technical capability throughout the life of the facility.

Financial Capability

The permittee shall demonstrate financial capability under A.R.S. § 49 -243(N) and A.A.C. R18-9-A203 as discussed below. The permittee shall maintain financial capability throughout the life of the facility. The estimated closure and post -closure cost for Stage 1 for the purposes of financial assurance is $9,524,000. The financial assurance mechanism shall be demonstrated for both the UIC and APP permits, prior to commencement of injection and recovery operations for Stage 1 as described in CSI No. 13 in Section 3.0 . Additional financial assurance mechanism requirements for Stages 2 and 3 are required as described in CSI Nos. 16 and 17 in Section 3.0.

Zoning Requirements

Mining activity of greater than five contiguous acres is exempt from zoning requirements pursuant to A.R.S. § 11-812.

VII. ADMINISTRATIVE INFORMATION

Public Notice (A.A.C. R18-9-108(A))

The public notice is the vehicle for informing all interested parties and members of the general public of the contents of a draft permit or other significant action with respect to a permit or application. The aquifer protection program rules require that permits be public noticed in a newspaper of general circulation within the area affected by the facility or activity and provide a minimum of 30 calendar days for interested parties to respond in writing to ADEQ. The basic intent of this requirement is to ensure that all interested parties have an opportunity to comment on significant actions of the permitting agency with respect to a permit application or permit.

Public Comment Period (A.A.C. R18-9-109(A))

The Department shall accept written comments from the public prior to granting the APP. The written public comment period begins on the publication date of the public notice and extends for 30 calendar days. After the closing of the public comment period, ADEQ is required to respond to all significant comments at the time a final permit decision is reached or at the same time a final permit is actually issued.

Public Hearing (A.A.C R18-9-109(B))

A public hearing may be requested in writing by any interested party. The request should state the nature of the issues proposed to be raised during the hearing. A

public hearing will be held if the Director determines there is a significant amount of interest expressed during the 30 -day public comment period, or if significant new issues arise that were not considered during the permitting process.

VIII. ADDITIONAL INFORMATION

Additional information relating to this proposed permit may be obtained from:

Arizona Department of Environmental Quality
Water Quality Division – Water Permits Section
Attn: Vimal Chauhan
1110 West Washington Street, Mail Code 5415B-3
Phoenix, Arizona 85007
Phone: (602) 771-4362